

Please amend claim 10 as follows:

10. (Amended) A method of forming a silicon oxide layer comprising:

providing a semiconductor substrate having a stepped portion;

coating the semiconductor substrate with a spin-on glass (SOG) composition

containing perhydropolysilazane having the compound formula  $-(SiH_2NH)_n-$  where  $n$  represents a positive integer, a weight average molecular weight within the range of from about 4,000 to about 8,000, a molecular weight dispersion within the range of about 3.0 to about 4.0, and a viscosity within the range of about 1 to about 10 mPa.s, at a shear rate within the range of about 54 to 420 (1/s), and

curing the SOG layer to form a layer of silicon oxide having a planar surface.

The changes in the previous claim are indicated below by brackets for deletions and underlining for insertions.

10. (Amended) A method of forming a silicon oxide layer comprising:  
providing a semiconductor substrate having a stepped portion;  
coating the semiconductor substrate with a spin-on glass (SOG) composition containing perhydropolysilazane having the compound formula  $-(\text{SiH}_2\text{NH})_n-$  where  $n$  represents a positive integer, a weight average molecular weight within the range of from about 4,000 to about 8,000, and a molecular weight dispersion within the range of about 3.0 to about 4.0, and a viscosity within the range of about 1 to about 10 mPa.s, at a shear rate within the range of about 10 to 1,000 (1/s), and  
curing the SOG layer to form a layer of silicon oxide having a planar surface.

Please amend claim 20 as follows:

A2 20. (Amended) A method of forming a silicon oxide layer comprising:  
providing a semiconductor substrate having a stepped portion;  
forming a silicon nitride layer having a thickness within the range of from about 200 to about 600 Å on the semiconductor substrate;  
coating the semiconductor substrate and silicon nitride layer with a spin-on glass (SOG) composition containing perhydropolysilazane having the compound formula -  $(\text{SiH}_2\text{NH})_n$ - wherein n represents a positive integer, a weight average molecular weight within the range of from about 4,000 to about 8,000, a molecular weight dispersion within the range of about 3.0 to about 4.0; and  
curing the SOG layer to form a layer of silicon oxide having a planar surface.

The changes in the previous claim are indicated below by brackets for deletions and underlining for insertions.

20. (Amended) A [The] method [as claimed in claim 10, further comprising] of forming a silicon oxide layer comprising:

providing a semiconductor substrate having a stepped portion;

forming a silicon nitride layer having a thickness within the range of from about 200 to about 600 Å on the semiconductor substrate [before coating the spin-on glass composition];

coating the semiconductor substrate and silicon nitride layer with a spin-on glass (SOG) composition containing perhydropolysilazane having the compound formula - (SiH<sub>2</sub>NH)<sub>n</sub>- where n represents a positive integer, a weight average molecular weight within the range of from about 4,000 to about 8,000, a molecular weight dispersion within the range of about 3.0 to about 4.0; and

curing the SOG layer to form a layer of silicon oxide having a planar surface.

Please amend claim 23 as follows:

A<sup>3</sup>

23. (Amended) A method of forming a silicon oxide layer comprising:  
providing a semiconductor substrate having a stepped portion;  
coating the semiconductor substrate with a spin-on glass (SOG) composition  
containing perhydropolysilazane having the compound formula  $-(SiH_2NH)_n-$  where  $n$   
represents a positive integer, a weight average molecular weight within the range of from  
about 4,000 to about 8,000, a molecular weight dispersion within the range of about 3.0 to  
about 4.0, and  
curing the SOG layer to form a layer of silicon oxide having a planar surface,  
wherein the stepped portion is formed by:  
partially etching an upper portion of the semiconductor substrate to form a  
trench; and  
the silicon oxide layer is formed by:  
coating the SOG composition on the substrate to fill the trench and to form  
an SOG layer; and  
curing the SOG layer by:  
pre-baking the SOG layer at a temperature within the range of from  
about 100 to about 500°C for a first period of time; and  
main-baking the SOG layer at a temperature within the range of  
about 900 to about 1000 °C for a second period of time.

The changes in the previous claim are indicated below by brackets for deletions and underlining for insertions.

23. (Amended) A [The] method [as claimed in claim 10.] of forming a silicon oxide layer comprising:

providing a semiconductor substrate having a stepped portion;

coating the semiconductor substrate with a spin-on glass (SOG) composition containing perhydropolysilazane having the compound formula  $-(SiH_2NH)_n-$  wherein  $n$  represents a positive integer, a weight average molecular weight within the range of from about 4,000 to about 8,000, a molecular weight dispersion within the range of about 3.0 to about 4.0, and

curing the SOG layer to form a layer of silicon oxide having a planar surface,

wherein the stepped portion is formed by:

partially etching an upper portion of the semiconductor substrate to form a trench; and

the silicon oxide layer is formed by: [;]

coating the SOG composition on the substrate to fill the trench and to form an SOG layer; and

curing the SOG layer by:

pre-baking the SOG layer at a temperature within the range of from about 100 to about 500°C for a first period of time; and

main-baking the SOG layer at a temperature within the range of about 900 to about 1000 °C for a second period of time.

Please amend claim 25 as follows:

25. (Amended) A method of forming a silicon oxide layer comprising:  
providing a semiconductor substrate having a stepped portion;  
coating the semiconductor substrate with a spin-on glass (SOG) composition  
containing perhydropolysilazane having the compound formula  $-(SiH_2NH)_n-$  where n  
represents a positive integer, a weight average molecular weight within the range of from  
about 4,000 to about 8,000, a molecular weight dispersion within the range of about 3.0 to  
about 4.0, and  
curing the SOG layer to form a layer of silicon oxide having a planar surface,  
wherein the stepped portion is formed by:  
forming a plurality of gate electrodes on the semiconductor substrate;  
and the silicon oxide layer is formed by:  
coating the SOG composition on the substrate to completely cover the  
plurality of gate electrodes and to form an SOG layer; and  
curing the SOG layer by:  
pre-baking the SOG layer at a temperature within the range of from  
about 100 to about 500°C for a first period of time; and  
main-baking the SOG layer at a temperature within the range of  
about 900 to about 1000 °C for a second period of time.

The changes in the previous claim are indicated below by brackets for deletions and underlining for insertions.

25. (Amended) A [The] method [as claimed in claim 10.] of forming a silicon oxide layer comprising:

providing a semiconductor substrate having a stepped portion;

coating the semiconductor substrate with a spin-on glass (SOG) composition containing perhydropolysilazane having the compound formula  $-(SiH_2NH)_n-$  wherein n represents a positive integer, a weight average molecular weight within the range of from about 4,000 to about 8,000, a molecular weight dispersion within the range of about 3.0 to about 4.0, and

curing the SOG layer to form a layer of silicon oxide having a planar surface,  
wherein the stepped portion is formed by:

forming a plurality of gate electrodes on the semiconductor substrate;

and the silicon oxide layer is formed by: [:]

coating [a] the SOG composition on the substrate to completely cover the plurality of gate electrodes and to form an SOG layer; and

curing the SOG layer by:

pre-baking the SOG layer at a temperature within the range of from about 100 to about 500°C for a first period of time; and

main-baking the SOG layer at a temperature within the range of about 900 to about 1000 °C for a second period of time.



Please amend claim 27 as follows:

27. (Amended) A method of forming a silicon oxide layer comprising:  
providing a semiconductor substrate having a stepped portion;  
coating the semiconductor substrate with a spin-on glass (SOG) composition containing perhydropolysilazane having the compound formula  $-(SiH_2NH)_n-$  where n represents a positive integer, a weight average molecular weight within the range of from about 4,000 to about 8,000, a molecular weight dispersion within the range of about 3.0 to about 4.0, and

curing the SOG layer to form a layer of silicon oxide having a planar surface, wherein the stepped portion is formed by:

forming an insulation layer on the semiconductor substrate; and

forming a plurality of metal wiring patterns on the insulation layer;

and the silicon oxide layer is formed by:

coating the SOG composition on the substrate to completely cover the metal wiring patterns thereby to form an SOG layer; and

curing the SOG layer by:

pre-baking the SOG layer at a temperature within the range of from about 100 to about 500°C for a first period of time; and

main-baking the SOG layer at a temperature within the range of about 900 to about 1000 °C for a second period of time.

The changes in the previous claim are indicated below by brackets for deletions and underlining for insertions.

27. (Amended) A [The] method [as claimed in claim 10.] of forming a silicon oxide layer comprising:

providing a semiconductor substrate having a stepped portion;

coating the semiconductor substrate with a spin-on glass (SOG) composition containing perhydropolysilazane having the compound formula  $-(\text{SiH}_2\text{NH})_n-$  where  $n$  represents a positive integer, a weight average molecular weight within the range of from about 4,000 to about 8,000, a molecular weight dispersion within the range of about 3.0 to about 4.0, and

curing the SOG layer to form a layer of silicon oxide having a planar surface,

wherein the stepped portion is formed by:

forming an insulation layer on the semiconductor substrate; and

forming a plurality of metal wiring patterns on the insulation layer;

and the silicon oxide layer is formed by: [;]

coating [a] the SOG composition on the substrate to completely cover the metal wiring patterns thereby to form an SOG layer; and

curing the SOG layer by:

pre-baking the SOG layer at a temperature within the range of from

about 100 to about 500°C for a first period of time; and

main-baking the SOG layer at a temperature within the range of about 900 to about 1000 °C for a second period of time.